# The Riverbend Hospital

Figure B.1 depicts the class diagram for the Riverbend Hospital.

Figure B.1



Each time a patient receives treatment or attention from a member of the nursing or physician medical staff at the hospital, an entry is made into the patient's automated hospital record. This information is stored to the *patient note* class in the *note\_comment* column. This class allows storage of an individual note comment that is up to 4000 characters in size. The class allows for storage of an unlimited number of comments for a patient. The relationship between *patient* and *patient\_note* is one-to-many as shown in Figure B.1.

When patients are admitted to the hospital, they are assigned to a specific bed. The hospital assigns each bed a unique identifier known simply as a *bed\_number*. A room may have zero, one or more beds (some rooms do not contain beds, e.g., a radiology laboratory). The information system has three additional classes, *bed*, *room*, and *bed\_type*. The *bed\_type* class is used as a validation class.

The hospital categorizes all personnel as *staff* members. Staff members include physicians, nurses, and administrative workers.

There is a relationship between physicians with medical specialties and data stored in the *medical\_specialty* class. Sometimes a physician will have more than one specialty; thus, the relationship between the *staff* and *medical\_specialty* class is many-to-many and is implemented by the creation of a *staff\_medspec* association common object list class. The *staff\_medspec* class decomposes the many-to-many relationship into two one-to-many relationships named *Has-Specialty* and *Assigned-Spec* as shown in Figure B.1. The *staff\_medspec* class has a composite primary key consisting of the primary key from *staff* and the primary key from *medical\_specialty*.

The hospital provides patients with various medical services. Services are categorized for insurance reporting purposes because insurance companies expect hospitals to use standard reporting categories and service codes. The hospital maintains data about services in a *service* class. Additionally, a *service\_cat* (category) class stores validation data about service code categories. The relationship between a *service\_cat* and *service* is one-to-many because each service falls into a single category.

The hospital keeps records of the services provided by a staff member to each patient. The rendering of a service is termed a *treatment* and is implemented by three relationships named *Gets-Treatment*, *Treatment-Provided*, and *Gives-Treatment* linking *treatment* to the *patient*, *service*, and *staff* class, respectively as shown in Figure B.1. Each *treatment* has a unique identifier, the *treatment\_number*. Each class related to *treatment* is linked by storing a FOREIGN KEY column (*pat\_id*, *service\_id*, and *staff\_id*) in the *treatment* class. The hospital maintains information about treatments including the patient, staff member, and service as well as the date/time of the treatment and the charge. Additional comments regarding each treatment are also recorded. These comments may include diagnosis information.

Physicians prescribe medicines to be administered to patients. The hospital stores medicines in its internal pharmacy department. Information about medicines that are stocked is stored in the *medicine* class. The prescription of medicine is an association common object list class that relates the *staff*, *patient*, and *medicine* classes, and is implemented as the class named *prescription* with three one-to-many relationships named *Orders-Prescription*, *Gets-Prescription*, and *Medicine-Provided*.